

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
13 February 2003 (13.02.2003)

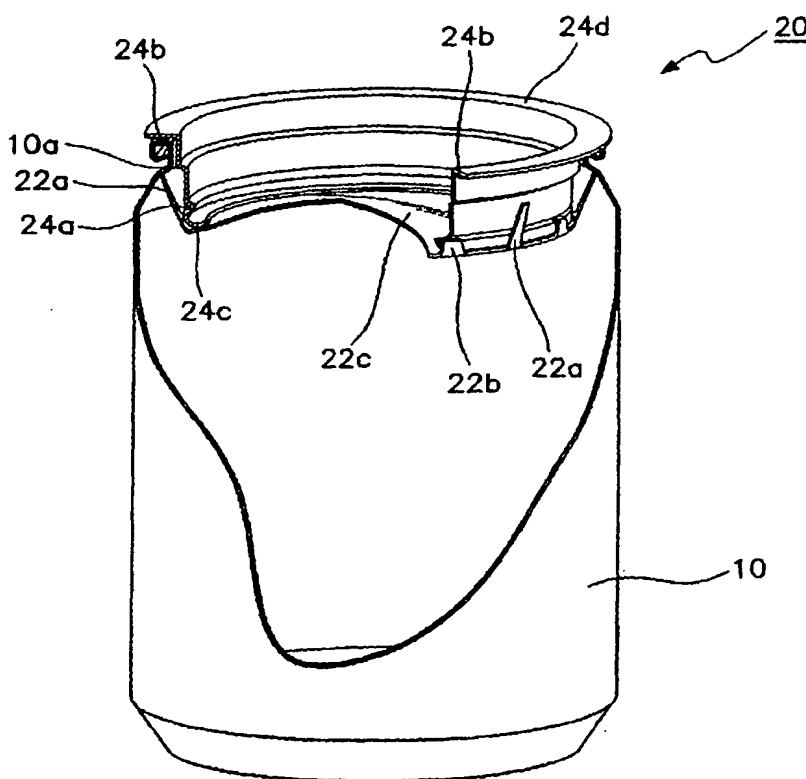
PCT

(10) International Publication Number
WO 03/011697 A1

- (51) International Patent Classification⁷: **B65D 17/00**
- (21) International Application Number: **PCT/KR02/01388**
- (22) International Filing Date: **24 July 2002 (24.07.2002)**
- (25) Filing Language: **Korean**
- (26) Publication Language: **English**
- (30) Priority Data:
UM2001-23211 **31 July 2001 (31.07.2001)** **KR**
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- (81) Designated States (*national*): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.**
- (84) Designated States (*regional*): **ARIPO patent (GI, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).**

[Continued on next page]

(54) Title: **A BEVERAGE CAN**



(57) Abstract: A beverage can, which is easily opened and closed, that keeps contents in a sealed state includes a cap (20) coupled to a body (10) to be capable of opening and closing. The cap is formed of a lower lid (22) and an upper lid (20). The lower lid has a repulsive plate capable of elastically changing shape at the central portion to be convex. A plurality of hooking protrusions (22a) protruding outwardly at the edge of the repulsive plate are arranged in a predetermined interval. Insertion grooves (24a) are formed along the circumference of a lower end portion of the upper lid. A plurality of insertion protrusions (22b) are formed between the hooking protrusions at an edge of the lower lid and have upper end portions bend inwardly to fit into the insertion grooves of the upper lid. As the insertion grooves and the insertion protrusions are coupled, the upper lid is fixedly coupled to the lower lid. Thus, the beverage can is opened and closed as the repulsive plate of the lower lid is elastically deformed. Also, the beverage can keeps the content in a sealed state as the cap is opened and closed, forming a seal, with respect to the body.

WO 03/011697 A1



Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A BEVERAGE CAN

Technical Field

The present invention relates to a beverage can, and more
5 particularly, to a beverage can having a cap that is coupled to the can to be capable of opening and closing so that the remaining beverage can be kept in a sealed state.

Background Art

10 In general, a beverage can for storing beverages such as soft drinks, tea, and coffee (hereinafter, referred to as a beverage) has an opening at the upper surface thereof. An opening piece closing the opening is formed to be detachable at the opening. A pull tab to detach the opening piece is provided at one end of the opening piece.

15 When a user pulls a pull tab, the opening piece is pushed into the can to form an opening. Accordingly, the user can make an opening by using the pull tab of a beverage can and drink a beverage in the can through the opening.

A body portion of a typical beverage can where a beverage is
20 stored is manufactured of steel that is relatively cheap. However, the upper portion of the can where the opening piece is formed is manufactured of aluminum that is relatively expensive, and cannot be made of steel due to a technical problem. The use of aluminum for the can raises the manufacturing costs. Also, since the can is
25 manufactured of two materials (steel and aluminum), rather than a single material, recycling become more difficult.

In particular, to recycle the can made of steel and aluminum, the can must be separated into a steel portion and an aluminum portion. However, separating the can into the steel portion and the aluminum

portion is costly and requires much effort. As a result, the impracticality of recycling the can is raised, and a great number of cans are not recycled such that environmental pollution becomes an issue.

Also, since the opening of a typical can, through which a
5 beverage flows, is narrow, the flow of the beverage is not smooth, thus drinking the beverage is inconvenient. Further, the remaining amount of the beverage cannot be easily verified.

Furthermore, for typical cans, since it is not possible to close the opening once the opening is made, keeping the remaining beverage, in
10 particular, beer and soda, which include carbon dioxide, is difficult.

Disclosure of the Invention

To solve the above and other problems, the present invention provides a beverage can in which a cap is coupled to a body of the can
15 to be capable of opening and closing so that a user can easily drink and conveniently keep the beverage.

Also, the present invention provides a beverage can which enables a beverage to flow smoothly from the body of the can when a user drinks the beverage.

20 Further, the present invention provides a beverage can which can be easily manufactured by simplifying the structure of a cap.

Brief Description of the Drawings

FIG. 1 is a partially cut-away perspective view illustrating a
25 beverage can according to the present invention;

FIG. 2 is an exploded perspective view illustrating the can according to the present invention;

FIG. 3 is a perspective view illustrating upper and lower lids adopted in the can according to the present invention; and

30 FIGS. 4A and 4B are views showing the states of the lower lids

according to elastic deformation of a repulsive plate.

Best mode for carrying out the Invention

Referring to the accompanying drawings, a beverage can
5 according to a preferred embodiment of the present invention is formed
of a body 10 that is cylindrical and a cap 20 that is detachable. The
body 10 has an inner space where a beverage is stored. In addition, an
upper portion of the body 10 is entirely open, and an upper end portion
of the body 10 protrudes inwardly forming a hook step 10a. Also, the
10 upper end of the body 10 is bent outwardly so that a sharply cut portion
of the body 10 is prevented from contacting the mouth of a user who
opens the cap 20 and to drink the beverage stored in the body 10 of the
can.

The cap 20 is formed of a lower lid 22 and an upper lid 24. The
15 lower lid 22 has a repulsive plate 22c formed to be convex at the central
portion so as to be capable of elastically changing shape. A plurality of
hooking protrusions 22a protruding upward and outward from the edge
of the repulsive plate 22c are arranged according to a predetermined
interval.

20 A lower end portion of the upper lid 24 is fixedly coupled to the
edge of the lower lid 22. More specifically, an insertion groove 24a is
formed along the outer circumferential surface of the lower end portion of
the upper lid 24. A plurality of insertion protrusions 22b, each having
an upper end portion bent inwardly to be inserted into the insertion
25 groove 24a of the upper lid 24, are formed to be respectively positioned
between the hooking protrusions 22a. As a result, as the insertion
grooves 24a and the insertion protrusions 22b are coupled to each other,
the upper lid 24 is fixedly coupled to the lower lid 22.

The central portion of the repulsive plate 22c is convex, and the
30 hooking protrusions 22a formed at the edge of the repulsive plate 22c

protrude outwardly at an angle from 90° to 180° with respect to the repulsive plate 22c. In this state, when the upper portion surface is pressed downward, as shown in FIG. 4A, the central portion of the repulsive plate 22c changes to be concave by a repulsive force.

5 Simultaneously, the hooking protrusions 22a shift in a direction toward the center of the repulsive plate 22c, to be nearly perpendicular to the repulsive plate 22c.

On the contrary, when the lower surface thereof of the repulsive plate 22c in the state shown in FIG. 4A is pressed upward, the central

10 portion changes to be convex again by a repulsive force as shown in FIG. 4B. Simultaneously, the hooking protrusions 22a are shifted outwardly to form an angle between 90°-180° with respect to the repulsive plate 22c.

Also, a flange 24d is formed at the upper end of the upper lid 24

15 so that, when the cap 20 is installed on the body 10, the flange 24d contacts and is caught by the upper end of the body 10. Thus, the cap 20 is installed at the upper end of the body 10 so as not to fall into the body 10. The lower end of the upper lid 24 is bent inwardly to contact the edge of the repulsive plate 22c.

20 The upper lid 24 includes a first packing 24b sealing the upper end portion contacting the body 10 and a second packing 24c sealing the lower end portion contacting the repulsive plate 22c. The first and second packings 24b and 24c can be formed of a variety of coating materials.

25 Accordingly, the first and second packings 24b and 24c provided at the upper lid 24 can seal the inner space formed by the body 10 and the cap 20. Also, the original taste of the beverage contained in the inner space can always be maintained.

Further, both the body 10 and the cap 20 are manufactured of

steel. Since the cap 20 does not have an opening piece as that of the conventional products, the body 10 and the cap 20 need not be manufactured of aluminum.

The opening and closing operation of the cap of a beverage can
5 according to a preferred embodiment of the present invention is described as follows.

First, as shown in FIG. 1, when the cap 20 is installed on the upper end of the body 10, the central portion of the repulsive plate 22c is maintained in a convex state. The hooking protrusions 22a formed at
10 the edge of the repulsive plate 22c are caught by the hook step 10a of the body 10 so that the cap 20 is firmly fixed to the body 10. The first and second packings 24b and 24c provided at the upper and lower end portions of the upper lid 24 respectively seal contact surfaces between the upper lid 24 and the body 10, and the upper lid 24 and the repulsive
15 plate 22c, respectively, so that the inner space formed by the body 10 and the cap 20 is sealed.

In the state in which the cap 20 is fixedly installed at the upper end of the body 10, when a user presses the central portion of the upper surface of the repulsive plate 22c of the cap 20 downward, the central
20 portion of the repulsive plate 22c changes to a concave state by the repulsive force, as shown in FIG. 4A. Simultaneously, the hooking protrusions 22a formed at the edge of the repulsive plate 22c are shifted in a direction toward the repulsive plate 22c to escape from the hook step 10a of the body 10, thus forming a right angle with respect to the
25 repulsive plate 22c.

As a result, the cap 20 can be easily separated from the upper end of the body 10, as shown in FIG. 2A. The user can drink the beverage contained in the body 10 where the whole upper surface is open, since the cap 20 is taken off as if drinking from a cup. Also, while
30 drinking the beverage, the user can easily check the amount of the

beverage remaining in the body 10 through the large opening.

In the meantime, the user can push the lower surface of the repulsive plate 22c of the cap 20 separated from the body 10 upward to make the central portion of the repulsive plate 22c in the concave state to be convex again, as shown in FIG. 4B, and the hooking protrusions 22a at the edge of the repulsive plate 22c at the angle between 90°-180° with respect to the repulsive plate 22c. In this state, when the cap 20 is pushed into the upper portion of the body 10, the hooking protrusions 22a formed at the edge of the repulsive plate 22c closely contact the inner surface of the upper end of the body 10 and are positioned in a downward direction along the inner circumferential surface of the body 10 by being slightly bent toward the center of the repulsive plate 22c. As the hooking protrusions 22a pass the hook step 10a, the hooking protrusions 22a are returned to their original position due to a restoration force of metal so as to be caught by the hook step 10a.

Consequently, the cap 20 is installed on the body 10, and the inner space formed by the body 10 and the cap 20 is sealed. The cap 20 can be easily installed on or detached from the body 10. Since the cap 20 seals the inner space when installed on the body 10, the beverage remaining after a user drinks the beverage can be kept in the can in a sealed state.

Also, a remaining beverage including carbon dioxide, such as beer and soda, can keep its original state by only installing the cap 20 on the body 10 so that the packings 24b and 24c prevent the carbon dioxide from escaping from the can.

Furthermore, in the beverage can according to the preferred embodiment of the present invention, since the body 10 and the cap 20 can be manufactured of a single material, that is, steel, there is no need to separate the cap 20 from the body 10 for recycling. Also, since the

can is manufactured of only steel which is cheaper than aluminum, the manufacturing costs are reduced lower than that for conventional beverage cans.

While this invention has been particularly shown and described
5 with reference to preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

For example, the beverage can according to the present invention
10 can be sufficiently used as a container for storing dry milk or cookies.

Industrial Applicability

As described above, since the entire upper surface of the beverage can according to the present invention is formed to have a
15 detachable cap, manufacturing costs are lower than that of a conventional beverage can having an aluminum cap. In addition, recycling is made easy, thereby aiding in the reduction of environment pollution caused by the disposal of the conventional cans. Also, a user can comfortably drink the beverage contained in the can as if drinking
20 from a cup, and the remaining beverage can be kept in a sealed state, which is convenient for the user.

What is claimed is:

1. A beverage can comprising:

a body, in which an inner space for storing a beverage is formed, having an upper end portion which is entirely open and a hook step
5 formed by the upper end portion of the body protruding inwardly;

a lower lid having a repulsive plate to be capable of elastically changing shape, whose central portion is convex, and a plurality of hooking protrusions protruding outwardly from an edge of the repulsive plate and arranged according to a predetermined interval; and

10 an upper lid, which is hollow in a central portion, having a lower end portion fixedly coupled to the edge of the repulsive plate and a flange formed at an upper end portion,

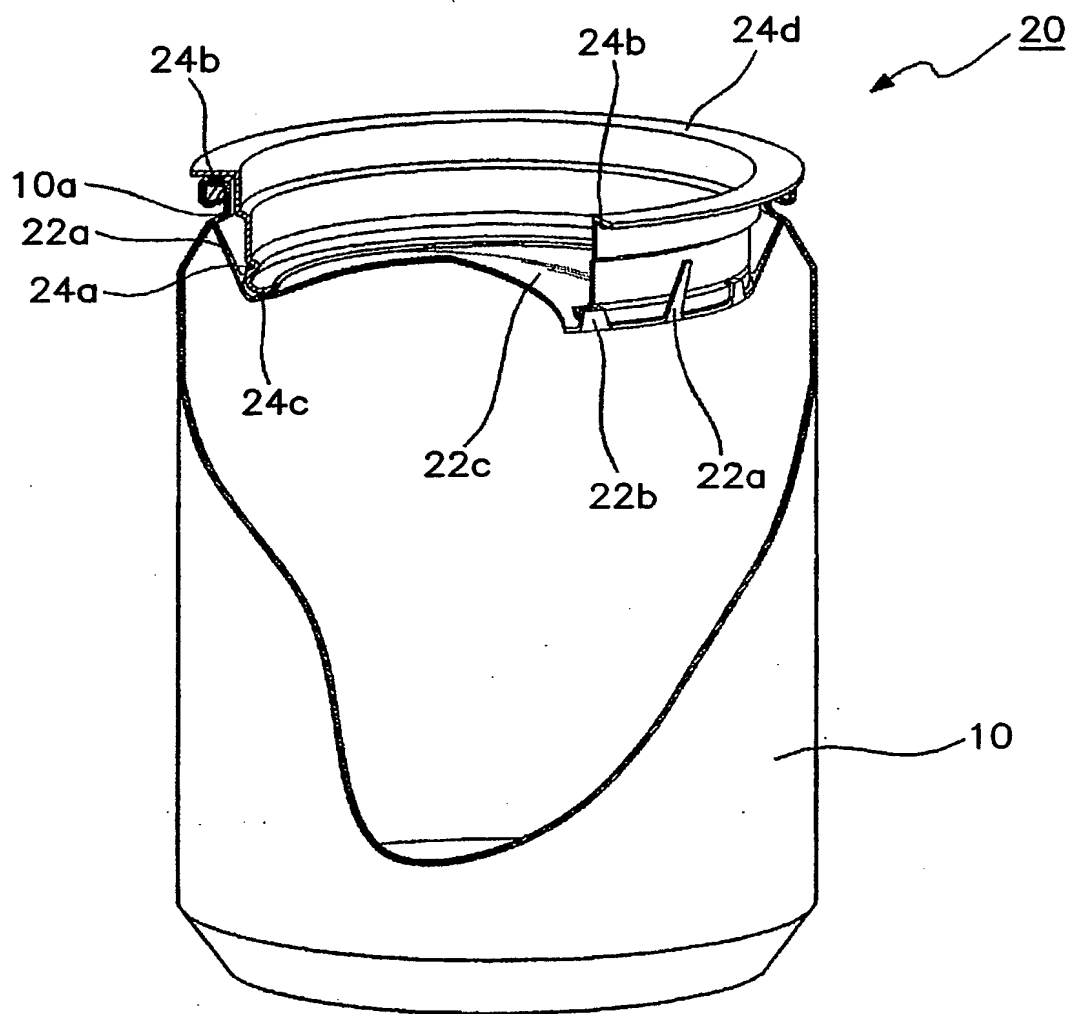
wherein, when the upper and lower lids coupled to each other are inserted into an upper end portion of the body, the hooking protrusions
15 of the lower lid are caught by the hook step of the body so that the upper and lower lids are fixedly installed on the body, and

when the central portion of the repulsive plate is pressed to be concave in a state in which the upper and lower lids are fixedly installed at the body, the hooking protrusions are separated from the hook step by
20 a repulsive force so that the upper and lower lids are separated from the body.

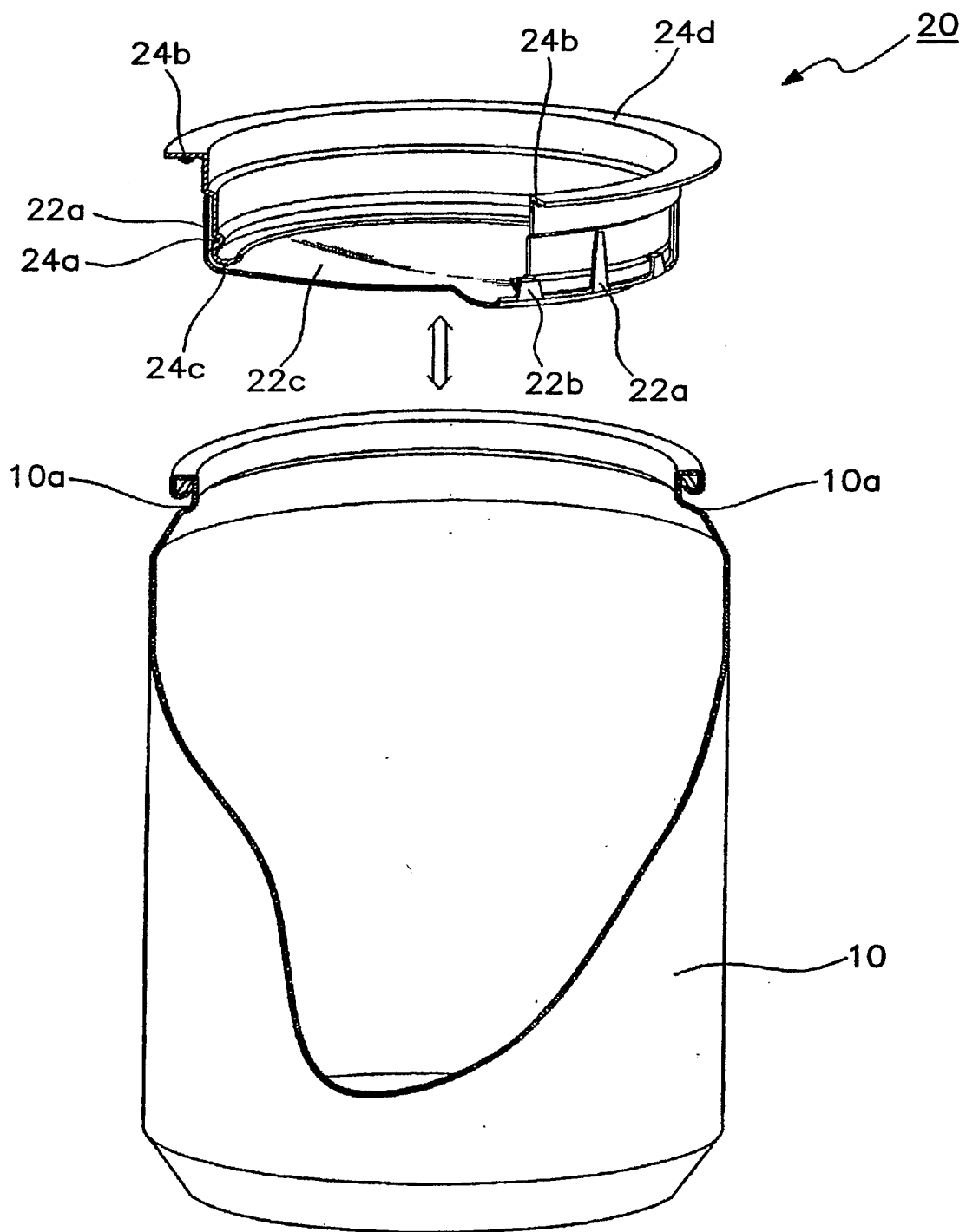
2. The beverage can as claimed in claim 1, wherein an insertion groove is formed along a circumference of the lower end
25 portion of the upper lid, a plurality of insertion protrusions are formed between the hooking protrusions at an edge of the lower lid and have upper end portions of the insertion protrusions bent inwardly to fit into the insertion groove of the upper lid, and the upper lid and the lower lid are fixedly coupled to each other as the insertion protrusions are
30 inserted into the insertion groove.

3. The beverage can as claimed in either claim 1 or claim 2, wherein a first packing is formed at a lower surface of the flange of the upper lid to seal a gap between the lower surface of the flange of the upper lid and the body, and a second packing is formed at the lower end
5 portion of the upper lid to seal a gap between the lower end portion of the upper lid and the lower lid.

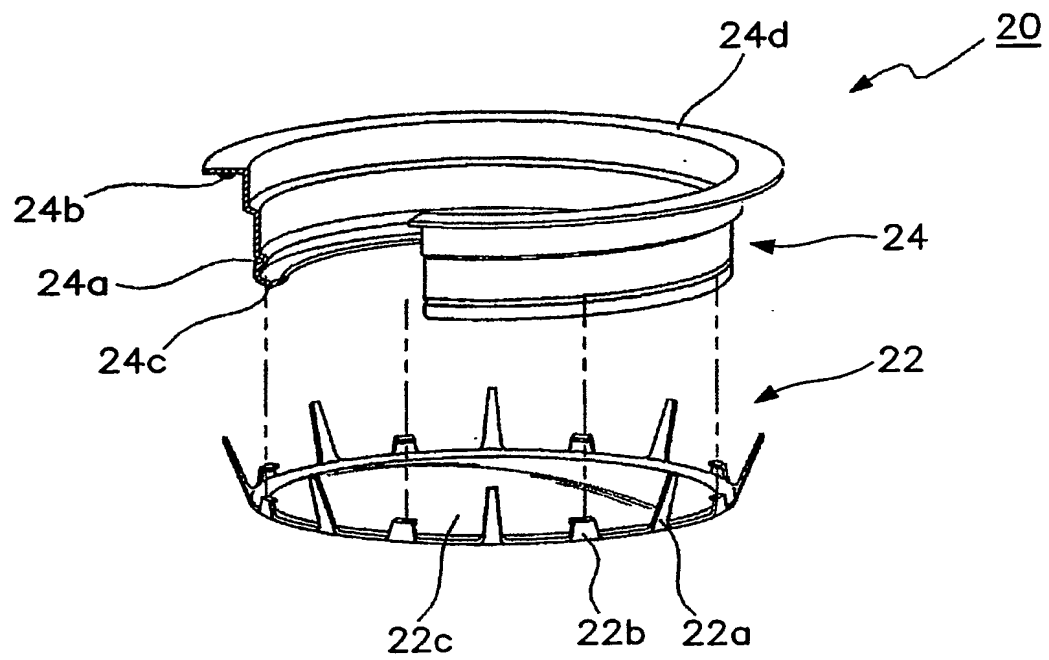
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FIG. 1



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FIG. 2



3/4
FIG. 3



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FIG. 4

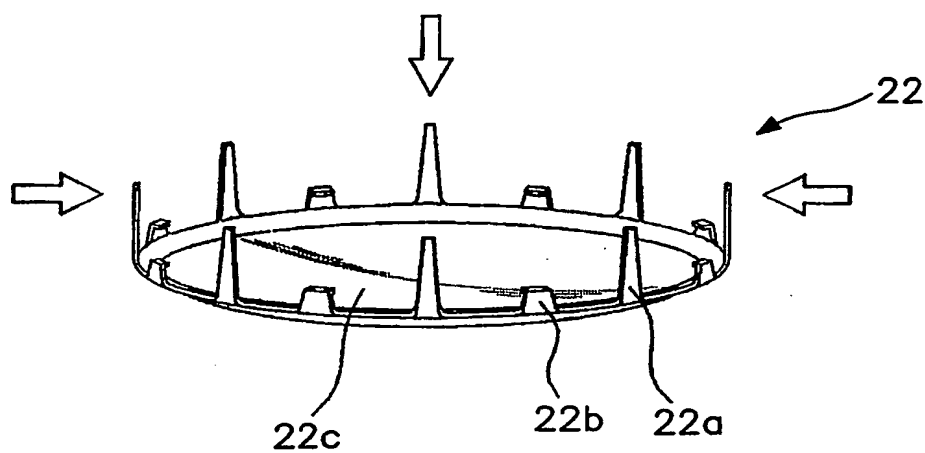
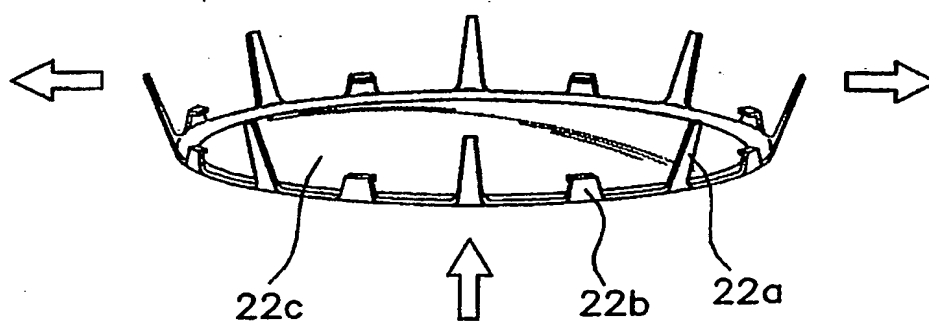


FIG. 5



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR02/01388

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 B65D 17/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B65D 17/00, B65D 17/28, B65D 17/40

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility Models and applications for Utility Models since 1973

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4,434,908 A (Buckeye Molding company) 06. Mar. 1984.(06.03.1984.)	1
A	KR 94-15692 U (Jeong Jin company) 22. July. 1994(22.07.1994)	1

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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Date of the actual completion of the international search

18 NOVEMBER 2002 (18.11.2002)

Date of mailing of the international search report

18 NOVEMBER 2002 (18.11.2002)

Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR02/01388

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4,434,908 A	06.03.1984	None	
KR 94-15692 U	22.07.1994	None	

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